

## CLAIMS

What is claimed is:

- 1 1. A projection system comprising:  
2 a solid state light source;  
3 a sensor either coupled to or integrated with the solid state light source to  
4 monitor a region of the solid state light source for a thermal condition, and output a  
5 signal indicative of the thermal condition of the monitored region; and  
6 a controller coupled to the sensor to conditionally initiate one or more thermal  
7 management actions based at least in part on the thermal condition of the region as  
8 indicated by the signal.
- 1 2. The projection system of claim 1, wherein the solid state light source comprises a  
2 selected one of a light emitting diode and a laser diode.
- 1 3. The projection system of claim 1, wherein the projection system further  
2 comprises an active cooling arrangement thermally coupled to the solid state light  
3 source, and the controller is coupled to the active cooling arrangement to control its  
4 operations, varying an amount of cooling the active cooling arrangement imparts on the  
5 solid state light source based at least in part on the thermal condition of the region as  
6 indicated by the signal.
- 1 4. The projection system of claim 3, wherein the active cooling arrangement  
2 comprises a fan, and the controller controls a speed of the fan, varying an amount of air  
3 flow the fan drives pass the solid state light source.

1 5. The projection system of claim 3, wherein the active cooling arrangement  
2 comprises a cooling pipe, and the controller controls a flow rate of the cooling pipe,  
3 varying an amount of fluid flow pass the solid state light source.

1 6. The projection system of claim 3, wherein the active cooling arrangement  
2 comprises a thermoelectric cooler, and the controller controls an operation level of the  
3 thermoelectric cooler, varying an amount of heat being removed from the solid state  
4 light source.

1 7. The projection system of claim 3, wherein the projection system further  
2 comprises drive circuitry coupled to the solid state light source to drive the solid state  
3 light source, and the controller is further coupled to the drive circuitry to influence its  
4 operation, indicating to the drive circuitry to vary an amount of drive voltage or current  
5 the drive circuitry applies to the solid state light source, based at least in part on the  
6 thermal condition indicated by the signal.

1 8. The projection system of claim 1, wherein the projection system further  
2 comprises drive circuitry coupled to the solid state light source to drive the solid state  
3 light source, and the controller is coupled to the drive circuitry to influence its operation,  
4 indicating to the drive circuitry to vary an amount of drive voltage or current the drive  
5 circuitry applies to the solid state light source, based at least in part on the thermal  
6 condition indicated by the signal.

1 9. The projection system of claim 1, wherein the projection system further  
2 comprises

3           a processor coupled to the light source to control the light source to project an  
4 image; and  
5           an input interface coupled to the processor to facilitate input to the processor  
6 pixel data of the image.

1   10.    The projection system of claim 8, wherein the processor comprises the controller.

1   11.    The projection system of claim 8, wherein the projection system further  
2 comprises a television tuner coupled to the input interface.

1   12.    In a projection apparatus, a method of operation comprising:  
2           monitoring a region of a solid state light source of the projection apparatus for  
3 thermal condition, and outputting a signal indicative of the thermal condition of the  
4 monitored region; and  
5           conditionally initiating one or more thermal management actions based at least in  
6 part on the thermal condition of the region as indicated by the signal.

1   13.    The method of claim 12, wherein said conditionally initiating of one or more  
2 thermal management actions comprises conditionally controlling an active cooling  
3 arrangement, varying an amount of cooling the active cooling arrangement imparts on  
4 the solid state light source based at least in part on the thermal condition of the region  
5 as indicated by the signal.

1   14.    The method of claim 13, wherein said conditionally controlling an active cooling  
2 arrangement comprises controlling a speed of a fan, varying an amount of air flow the  
3 fan drives pass the solid state light source.

1 15. The method of claim 13, wherein said conditionally controlling an active cooling  
2 arrangement comprises controlling an operation level of a thermoelectric cooler, varying  
3 an amount of heat being removed from the solid state light source.

1 16. The method of claim 13, wherein said conditionally controlling an active cooling  
2 arrangement comprises controlling a flow rate of a cooling pipe, varying an amount of  
3 fluid flowing pass the solid state light source.

1 17. The method of claim 13, wherein the method further comprises applying an  
2 amount of a selected one of a voltage and a current to drive the solid state light source,  
3 and said conditionally initiating of one or more thermal management actions further  
4 comprises conditionally indicating an variation to the amount of the selected one of the  
5 voltage and the current to be applied, based at least in part on the thermal condition  
6 indicated by the signal.

1 18. The method of claim 12, wherein the method further comprises applying an  
2 amount of a selected one of a voltage and a current to drive the solid state light source,  
3 and said conditionally initiating of one or more thermal management actions comprises  
4 conditionally indicating an variation to the amount of the selected one of the voltage and  
5 the current to be applied, based at least in part on the thermal condition indicated by the  
6 signal.

1 19. A projection apparatus comprising:  
2 solid state light source means for providing light;

3           means for monitor a region of the solid state light source means for a thermal  
4 condition, and output a signal indicative of the thermal condition of the monitored region;  
5 and  
6           means for conditionally initiating one or more thermal management actions  
7 based at least in part on the thermal condition of the region as indicated by the signal.

1 20. The projection apparatus of claim 19, wherein the projection apparatus further  
2 comprises active cooling means to cool the solid state light source means, and the  
3 controller means is also for controlling operation of the active cooling means, based at  
4 least in part on the thermal condition of the region as indicated by the signal.